<table>
<tr><td>Course code</td><td></td></tr>
<tr><td>Type and description</td><td>EC – Elective Course</td></tr>
<tr><td>ECTS credit</td><td>1</td></tr>
<tr><td>Course name</td><td>Textile mechanics</td></tr>
<tr><td>Course name in Polish</td><td>Mechanika tekstyliów</td></tr>
<tr><td>Language of instruction</td><td>English</td></tr>
<tr><td>Course level</td><td>8 PRK</td></tr>
<tr><td>Course coordinator</td><td>prof. dr hab. inż. Ryszard Korycki</td></tr>
<tr><td>Course instructors</td><td>prof. dr hab. inż. Ryszard Korycki</td></tr>
<tr><td>Delivery methods and course duration</td><td>
<table>
<tr><th></th><th>Lecture</th><th>Tutorials</th><th>Laboratory</th><th>Project</th><th>Seminar</th><th>Other</th><th>Total of teaching hours during semester</th></tr>
<tr><td>Contact hours</td><td>0</td><td>0</td><td>0</td><td>15</td><td>0</td><td>0</td><td>15</td></tr>
<tr><td>E-learning</td><td>no</td><td>no</td><td>no</td><td>no</td><td>no</td><td>no</td><td>no</td></tr>
<tr><td>Assessment criteria (weightage)</td><td>0</td><td>0</td><td>0</td><td>100%</td><td>0</td><td>0</td><td>100%</td></tr>
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<tr><td>Course objective</td><td>The course objective is to acquire the knowledge concerning the basic problems of textile mechanics.</td></tr>
<tr><td>Learning outcomes</td><td>After the finished course the doctoral student/postgraduate can formulate the problem, determine the model and solve the selected project task concerning the textile mechanics.

Effects:

Knowledge:
• Zakres i głębia – kompletność perspektywy poznawczej i zależności –

Skills:
• Wykorzystanie wiedzy – rozwiązywane problemy i wykonywane zadania
• Komunikowanie się – odbieranie i tworzenie wypowiedzi, upowszechnianie wiedzy w środowisku naukowym i posługiwanie się językiem obcym
• Organizacja pracy – planowanie i praca zespołowa
W4, U4, K1</td></tr>
<tr><td>Assessment methods</td><td>Presentation of the project.

The final grade is a grade of the result of realized project - 100%</td></tr>
<tr><td>Prerequisites</td><td>None</td></tr>
<tr><td>Course content with delivery methods</td><td>1. Basic problems of strength of materials: stresses, displacements, strains.
2. Stress-strain diagram during the tension.
3. Modeling of yarns and linear textile structures as elastic bodies.
4. Tension of yarns, calculation principle, admissible stresses. Strain, energy of strain, diagram.
5. Stresses in inclined section. Unidirectional tension. Mohr’s circle of interia.
6. Statically indeterminate systems, basic cases.
7. Rheological state equations. Rheological models – characteristic, state equations.
8. Heat. Basic laws and description of the phenomenon. Methods of heat exchange and laws describing the problem. Differential description of heat transport.</td></tr>
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	9. Heat transfer in textile structures, heat balance, differential heat equation. Uniqueness of solutions, boundary and initial conditions.
Basic reference materials	1. Budynas R. G.: Advanced Strength and Applied Stress Analysis, Amazon 2. Hibbeler R. C.: Mechanics of materials, Amazon 3. Schwartz P.: Structure and Mechanics of Textile Fibre Assemblies, 2008 4. Żurek W., Chrzanowski M., Sybilska W., Jałmużna I.: The application of Zurek's rheological model for description of mechanical behaviour of textiles subjected to different state of loads. Journal of Achievements in Materials and Manufacturing Engineering. 43, 2010 5. Li, Y.: The science of clothing comfort, Textile Progress 15; 1,2; 2001
Other reference materials	1. Niezgodziński T.: Mechanika ogólna, PWN (in Polish) 2. Niezgodziński M. E., Niezgodziński T.: Wytrzymałość materiałów, PWN (in Polish) 3. Szafrańska H., Korycki R.: Modelling of the Temperature Field within Textile Inlayers of Clothing Laminates, Fibres & Textiles in Eastern Europe, 2013, 2013 | Nr 4 (100) | 118—122 4. Korycki R: the supportive materials of lectures – title to the property
Average student workload outside classroom	15h
Comments	None
Last update	March 2023